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No. NML-FG/AMP-AG/53-19/CORR-1

Date: 13.01.2020

CORRIGENDUM - 1

Sub: Tender for Supply of "Laser Ultrasonic Scanning System".

Ref: 1) Enquiry No. NML-FG/AMP-AG/53-19, Dated: 27/12/2019

2) CPPP Tender ID No. 2019_CSIR_503300_1

With reference to the above procurement, It is informed that **technical specification has been revised** after Pre-Bid Conference. The bid may be submitted as per the revised technical specifications. **All other terms and conditions will remain unaltered.**

(Handwritten signature)
13.01.2020

(N.K. Singh)

Stores & Purchase Officer

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13/01/2020

Revised Specification for Laser Ultrasonic Scanning System

Sl. No.	System Specifications
1.	Frequency: <ul style="list-style-type: none"> • Minimum measurable vibration frequency ≥ 0.01 Hz • maximum frequency ≥ 20 MHz
2.	Velocity: <ul style="list-style-type: none"> • Minimum measurable velocity ≤ 0.02 $\mu\text{m}/\text{sec}$ • Maximum velocity ≥ 20 m/sec • resolution of $\geq 0.02\mu\text{m}/\text{sec}/\text{VHz}$
3.	Laser sources: <ul style="list-style-type: none"> • Infra red laser (class2) with ≥ 1 mW output
4.	Scanning features: <ul style="list-style-type: none"> • Scanning range : $50^\circ \times 40^\circ$ with angular resolution ≤ 0.005 deg or better • Angular stability ≤ 0.1 deg/hr • Scan areas $\geq 1\text{m}^2$ • Scanning speed of the instrument: at least 25 points/sec
5.	Standoff distance <ul style="list-style-type: none"> • Minimum Standoff distance should be ≤ 15 cm • Maximum standoff distance ≥ 20 meters
6.	The system should have <ul style="list-style-type: none"> • an appropriate sensor head with fast scan speed, video camera for live image and processing hardware, etc. • a synchronized inbuilt internal signal generator up to 10MHz or more. • a power amplifier for driving piezoelectric transducers; frequency range:DC to 1MHz, Voltage level in the order of 200V • Facility for synchronization with vibration source • decoder with at least 10 ranges • atleast four acquisition channels • HD video camera with $\geq 2\text{M}$ pixel resolution and with minimum optical zoom of 20 X • Real – time high speed auto focus of the laser head for accurate measurements • Integrated geometry distance sensor with coaxial light path for 3-dimensional grid construction of scanned object. • Tripod for holding the laser scanning head in stable position

7.	<p>System Requirements</p> <ul style="list-style-type: none"> • Suitable for NDT and structural health monitoring applications. • Operating temperatures : at least 25° C to 60 °C • Withstand the relative humidity of at least 80% without condensation
8.	<p>Software features</p> <ul style="list-style-type: none"> • Compatible software to control laser and scanning mirrors with features including laser autofocus, camera zoom etc • Software should have signal generator for standard signals such as sine, chirp, random, white noise etc. and also should be able to generate user defined signals • Two dimension mesh definition, high density measurement points, data collection, post-processing (frequency and time domain analysis) data export options etc, should be possible using the software • Image construction from grid point measurements, tailoring of images, animation of vibration & analysis. • Import and export of data/images for extended/remote analysis. • Time Domain & Frequency Domain display & analysis of image/data. • Automatic alignment of laser spot in grid points using image processing • Ability to measure time domain data and generate animation to display in user selectable playback speeds e.g. "Slow motion" for viewing the wave propagation. • Signal averaging function should be available in both time and frequency domain measurement. • The system should be able to measure the geometry of object at exactly same points of the measured vibration points.
9.	<p>Computer</p> <p>Industrial Computer preloaded with all necessary software, relevant cards and having following features:</p> <ul style="list-style-type: none"> • Processor: Intel® Xeon® E5 1600 v4 processor quad core • Memory: 16 GB DDR4-2400 SDRAM (2 x 8 GB) 3.7 GHz • Storage: 2 TB 7200 rpm SATA, SAS controller with 12Gb/s speed • Operating system: Compatible with system • LED Backlit LCD Monitor, Size: 24 inch, Aspect Ratio: 16:9
10.	<p>Installation and Commissioning: To be done by vendor after supply of equipment</p>

11.	Training: Two weeks training at CSIR-NML to be arranged by vendor
12.	Warranty Information: One year comprehensive warranty AMC requirements: Two years non-comprehensive AMC after completion of warranty period
13.	Other requirements <ul style="list-style-type: none"> • The latest technical datasheet for the quoted model must be attached and the same should be available on the website • Declaration from OEM that they will support the model for a period of ten years by spares and service from the date of installation. • The equipment should be the latest model satisfying above specifications.

(Handwritten Signature)
13.01.2020

(N.K. Singh)
Stores & Purchase Officer